WHAT IS CLAIMED IS:

1. A method for performing a fractional shift of transformed data, comprising:

providing at least one fractional shift transform matrix in non-volatile storage that is capable of fractionally shifting data by a shift factor;

receiving the transformed data; and

applying the at least one fractional shift transform matrix to the transformed data to generate output transformed data that is fractionally shifted by the shift factor without inverse transforming the transformed data.

2. The method of claim 1, wherein the transformed data comprises image data.

3. The method of claim 1, wherein the transformed data includes data that has been downsampled.

4. The method of claim 1, wherein the shift factor is between zero and one.

5. The method of claim 1, wherein the non-volatile storage includes matrices having different shift factors to perform the fractional pel shift at different shift factors.

6. The method of claim 1, wherein the transformed data is transformed by applying a Forward Discrete Cosine Transform (FDCT) to an input data stream.

7. The method of claim 6, wherein the input data stream was encoded performing entropy encoding after applying the FDCT and quantization.

8. The method of claim 7, further comprising:

entropy decoding the received encoded data before applying the at least one fractional shift transform matrix; and

entropy encoding the output fractionally shifted transformed data.

9. The method of claim 8, wherein the at least one fractional shift transform matrix comprises three transformed matrices $\tilde{A}$, $\tilde{B}$, and $\tilde{C}$ that are applied to vectors $\tilde{G}_1, \tilde{G}_2,..., \tilde{G}_m$ from the entropy decoded encoded data, wherein the output encoded data is generated using two functions comprising:

$$\tilde{H}_k = \tilde{A} \bullet \tilde{G}_k + \tilde{B} \bullet \tilde{G}_{k+1} \quad \text{for } k = 1, 2, ..., m\text{-}1$$

$$\tilde{H}_k = \tilde{C} \bullet \tilde{G}_k \quad \text{for } k = m,$$

wherein the output encoded data comprises an *m*x*m* matrix of the vectors $\tilde{H}_1, \tilde{H}_2,....,\tilde{H}_m$.

10. The method of claim 8, wherein the fractional shift is collocated on a first data point in the encoded data to fractionally shift the data.

11. The method of claim 9, wherein the transform matrices $\tilde{A}$, $\tilde{B}$, and $\tilde{C}$ are modified to accomplish dequantization and requantization of the vectors $\tilde{G}_1, \tilde{G}_2,..., \tilde{G}_m$ and $\tilde{H}_1, \tilde{H}_2,....,\tilde{H}_m$, respectively.

12. The method of claim 1, wherein each fractional shift transform matrix is generated by applying a two-dimensional Forward Discrete Cosine Transform (FDCT) to a fractional shift matrix including the shift factors.

13. The method of claim 1, wherein the received and output encoded data is encoded using one of the Joint Photographic Experts Group (JPEG) or Moving Pictures Expert Group (MPEG) compression techniques.

14. The method of claim 1, wherein the steps of providing the at least one transformed matrix, receiving the input data stream, and applying the at least one transformed matrix are performed by a printer.

15. The method of claim 1, further comprising:

decoding the output encoded data; and

rendering the decoded data on an output device.

16. The method of claim 15, wherein the output devices is a member of a set of output devices comprising a printer, display monitor, and storage.

17. The method of claim 1, wherein the fractional shift matrix is modified to accomplish dequantization and requantization of the transformed data without inverse transforming the transformed data.

18. A system for performing a fractional shift of transformed data, comprising:

a non-volatile storage;

at least one fractional shift transform matrix represented in the non-volatile storage that is capable of fractionally shifting data by a shift factor;

means for receiving the transformed data;

means for applying the at least one fractional shift transform matrix to the transformed data to generate output transformed data that is fractionally shifted by the shift factor without inverse transforming the transformed data.

19. The system of claim 18, wherein the transformed data comprises image data.

20. The system of claim 18, wherein the transformed data includes data that has been downsampled.

21. The system of claim 18, wherein the shift factor is between zero and one.

22. The system of claim 18, wherein the non-volatile storage includes matrices having different shift factors to perform the fractional pel shift at different shift factors.

23. The system of claim 18, wherein the transformed data is transformed by applying a Forward Discrete Cosine Transform (FDCT) to an input data stream.

24. The system of claim 23, wherein the input data stream was encoded performing entropy encoding after applying the FDCT and quantization.

25. The system of claim 24, further comprising:

means for entropy decoding the received encoded data before applying the at least one fractional shift transform matrix; and

means for entropy encoding the output fractionally shifted transformed data.

26. The system of claim 18, wherein each fractional shift transform matrix is generated by applying a two-dimensional Forward Discrete Cosine Transform (FDCT) to a fractional shift matrix including the shift factors.

27. The system of claim 18, wherein the steps of providing the at least one transformed matrix, receiving the input data stream, and applying the at least one transformed matrix are performed by a printer.

28. The system of claim 18, further comprising:

decoding the output encoded data; and

rendering the decoded data on an output device.

29. The system of claim 28, wherein the output devices is a member of a set of output devices comprising a printer, display monitor, and storage.

30. The system of claim 18, wherein the fractional shift matrix is modified to accomplish dequantization and requantization of the transformed data without inverse transforming the transformed data.

31. An article of manufacture including code for performing a fractional shift of transformed data, wherein the code causes operations to be performed, the operations comprising:

providing at least one fractional shift transform matrix in non-volatile storage that is capable of fractionally shifting data by a shift factor;

receiving the transformed data; and

applying the at least one fractional shift transform matrix to the transformed data to generate output transformed data that is fractionally shifted by the shift factor without inverse transforming the transformed data.

32. The article of manufacture of claim 31, wherein the transformed data comprises image data.

33. The article of manufacture of claim 31, wherein the transformed data includes data that has been downsampled.

34. The article of manufacture of claim 31, wherein the shift factor is between zero and one.

35. The article of manufacture of claim 31, wherein the non-volatile storage includes matrices having different shift factors to perform the fractional pel shift at different shift factors.

36. The article of manufacture of claim 31, wherein the transformed data is transformed by applying a Forward Discrete Cosine Transform (FDCT) to an input data stream.

37. The article of manufacture of claim 36, wherein the input data stream was encoded performing entropy encoding after applying the FDCT and quantization.

38. The article of manufacture of claim 37, further comprising:

entropy decoding the received encoded data before applying the at least one fractional shift transform matrix; and

entropy encoding the output fractionally shifted transformed data.

39. The article of manufacture of claim 38, wherein the at least one fractional shift transform matrix comprises three transformed matrices $\tilde{A}$, $\tilde{B}$, and $\tilde{C}$ that are applied to vectors $\tilde{G}_1$, $\tilde{G}_2$,..., $\tilde{G}_m$ from the entropy decoded encoded data, wherein the output encoded data is generated using two functions comprising:

$$\tilde{H}_k = \tilde{A} \bullet \tilde{G}_k + \tilde{B} \bullet \tilde{G}_{k+1} \quad \text{for } k = 1, 2, \ldots, m\text{-}1$$

$$\tilde{H}_k = \tilde{C} \bullet \tilde{G}_k \quad \text{for } k = m,$$

wherein the output encoded data comprises an *m*x*m* matrix of the vectors $\tilde{H}_1$, $\tilde{H}_2,\ldots,\tilde{H}_m$.

40. The article of manufacture of claim 38, wherein the fractional shift is collocated on a first data point in the encoded data to fractionally shift the data.

41. The article of manufacture of claim 39, wherein the transform matrices $\tilde{A}$, $\tilde{B}$, and $\tilde{C}$ are modified to accomplish dequantization and requantization of the vectors $\tilde{G}_1$, $\tilde{G}_2,\ldots,\tilde{G}_m$ and $\tilde{H}_1$, $\tilde{H}_2,\ldots,\tilde{H}_m$, respectively.

42. The article of manufacture of claim 31, wherein each fractional shift transform matrix is generated by applying a two-dimensional Forward Discrete Cosine Transform (FDCT) to a fractional shift matrix including the shift factors.

43. The article of manufacture of claim 31, wherein the received and output encoded data is encoded using one of the Joint Photographic Experts Group (JPEG) or Moving Pictures Expert Group (MPEG) compression techniques.

44. The article of manufacture of claim 31, wherein the steps of providing the at least one transformed matrix, receiving the input data stream, and applying the at least one transformed matrix are performed by a printer.

45. The article of manufacture of claim 31, further comprising:

decoding the output encoded data; and

rendering the decoded data on an output device.

46. The article of manufacture of claim 45, wherein the output devices is a member of a set of output devices comprising a printer, display monitor, and storage.

47. The article of manufacture of claim 31, wherein the fractional shift matrix is modified to accomplish dequantization and requantization of the transformed data without inverse transforming the transformed data.